

A-350

INSTRUCTION MANUAL



TEAC[®] **A-350**
STEREO CASSETTE DECK

Congratulations on your purchase of the TEAC 350 Cassette deck, you now own one of the most versatile, home use stereo cassettes ever designed for the discriminating audiophile.

The TEAC 350 with the widely acclaimed Dolby Noise Reduction System represents a quantum increase in cassette sound quality, bringing you recording quality, features and performance to equal or surpass that of high quality open reel recorders.

Until this time the quality of cassette recordings was limited by the inherent noise of the tape itself. The revolutionary Dolby System, although commercially available and in use by almost all major recording studios, was not available to the home tape recordist.

The introduction of the Dolby System now brings to the home tape hobbyist all the benefits of the Dolby System at sharply reduced cost and with a simplicity of operation not possible with the commercial systems. The New TEAC 350 enables you to make recordings from any source with a dramatic gain in signal to noise ratio, as much as 10dB! The resultant reduction of noise and tape hiss produces a recording of breath-taking clarity, the expanded dynamic range gives greater sound impact without coloration or attenuative filtering.

The Dolby System as incorporated into the TEAC 350 operates both during recording and playback. During the recording phase, low amplitude high frequency signals are expanded by a precise amount, during playback they are compressed by exactly the same amount by a mirror image circuit. By this process all noise from both the cassette electronics and from the tape is eliminated or reduced to an inaudible level. This entire process is accomplished without in any way affecting the original sound quality, since no attenuative filtering is used, the original signal is reproduced with true fidelity but without annoying tape hiss or amplifier noise.

We know you will want to begin using your 350 immediately however we urge you to take a few moments to read this instruction manual. The short time required to familiarize yourself with the many unique features and proper operating techniques of this superb cassette deck will result in more professional recording and many years of uninterrupted enjoyment.

* Dolby is a trade mark of Dolby Laboratories, Inc.

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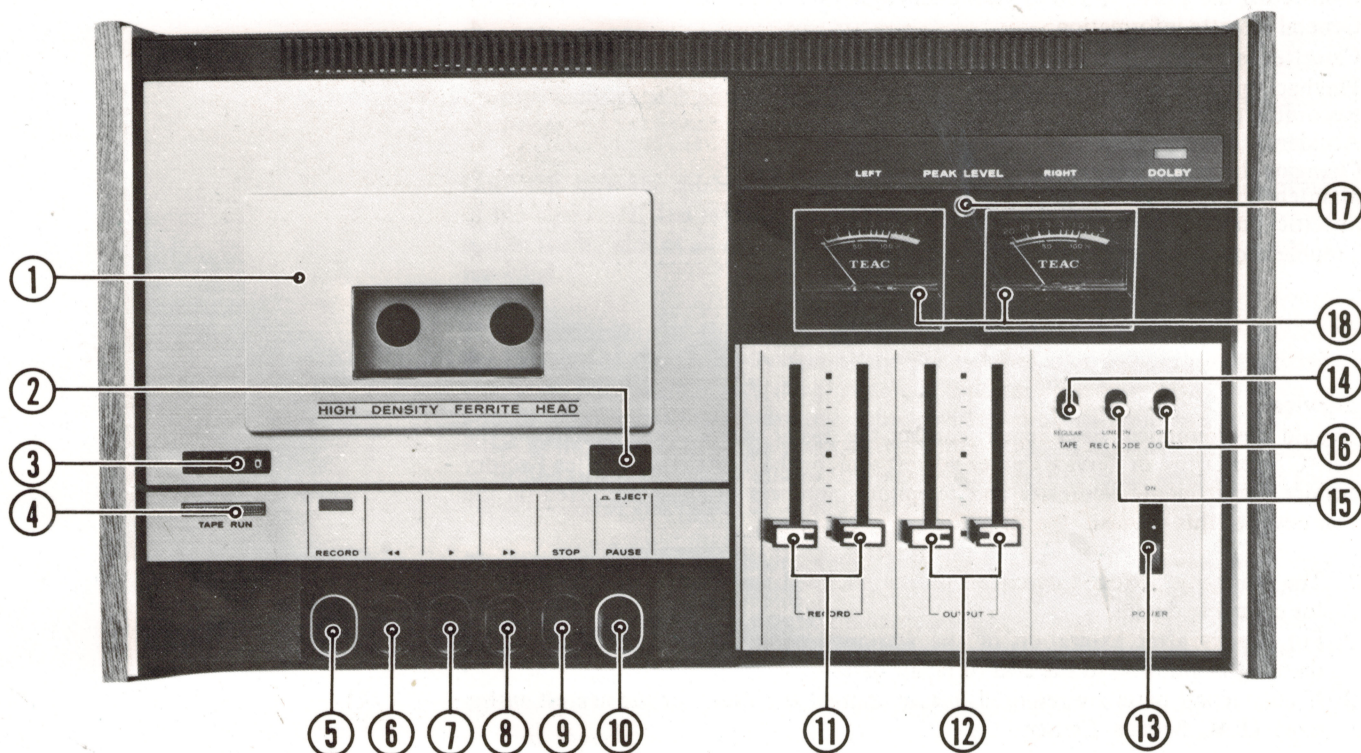
Service

Should the equipment need repair, contact the dealer where it was purchased, the TEAC Sales Office or Service Center nearest you, or the TEAC Head Office Factory Service Department. Addresses and telephone numbers of these are listed on the rear cover of this manual.

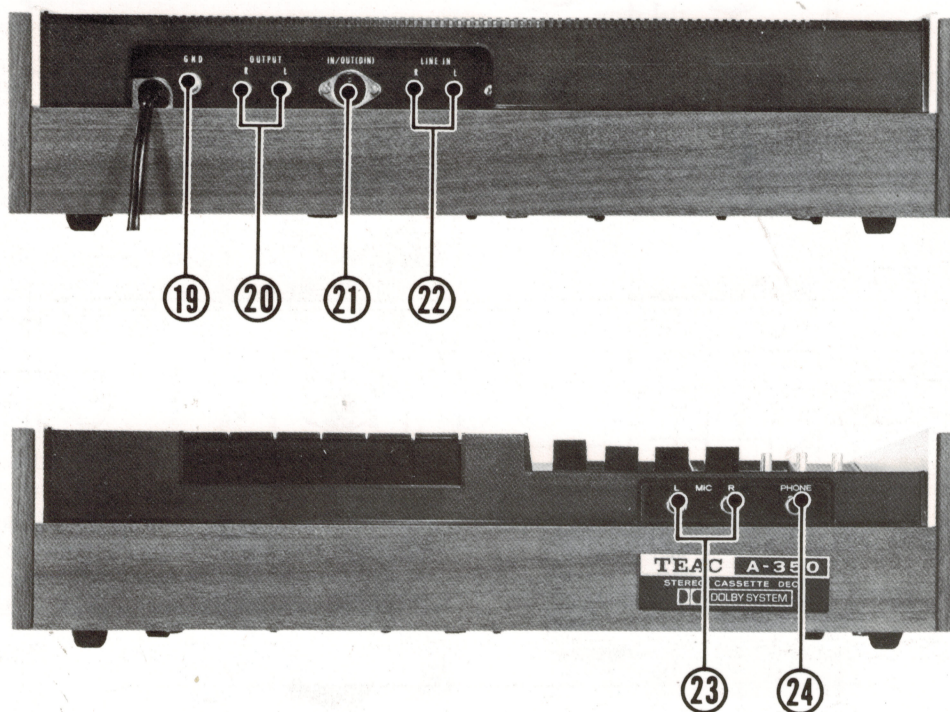
1. The Warranty period is described on the enclosed warranty card, read the card for complete details.
2. For repairs after expiration of the warranty period, a service charge will be required in addition to the cost of repair parts.
3. If only repair parts are required, please contact the dealer or the nearest authorized TEAC Service Center.

Note: Although the unit may still be under the warranty period you may be charged for repairs made necessary due to misuse or damage incurred as a result of improper operation. Therefore it is important that you thoroughly read and understand this manual prior to placing the unit into operation.

Function of the operating controls



1. **Cassette holder**
2. **Eject button:** Depress to open cassette compartment and to elevate cassette.
3. **Digit index counter:** Provides ready reference to program material on the tape. Resets to zero by depressing button on its left.
4. **Tape run indicator:** Indicates speed and direction of tape motion.
5. **Record button:** Activates the recording circuits, must be depressed simultaneously with the ► (Play) in order to start tape motion when recording. Also causes recording indicator lamp (located above record button) to illuminate.
6. **◄◄ Rewind button:** Causes tape to move rapidly from right to left reel. At completion of rewinding the Auto-stop feature will stop the tape and return control buttons to neutral position.
7. **► Play button:** Depress to play prerecorded tapes, also used in conjunction with the record button while recording.
8. **►► Fast forward button:** Causes tape to advance rapidly from left to right reel. When tape reaches the end, Auto-stop feature stops tape and returns button to neutral position.
9. **Stop button:** Stops the tape from any mode of operation. When depressed while in record mode, causes the record button to disengage.
Note: When changing from function to function such as fast forward to rewind etc., always depress the stop button before changing functions to prevent damage to the drive mechanism.
10. **Pause button:** Used to momentarily stop the tape in any mode of operation. When depressed during recording, the recording circuits remain operative, capstan remains in motion but pinch roller is retracted.
11. **L RECORD R:** Recording level controls, used to adjust the level of the recording signal, move the controls inboard to increase signal level, outboard to decrease signal level.
12. **L OUTPUT R:** Output level controls, used to adjust the amplitude of the output signal during playback. Also regulate the headphone volume. Move inboard to increase signal, outboard to decrease signal.
13. **Power (ON-OFF) switch:** Applies AC power to the TEAC 350.
Note: Although the Auto-stop mechanism stops the tape, returns all controls to neutral and retracts the pinch roller, it does not remove AC



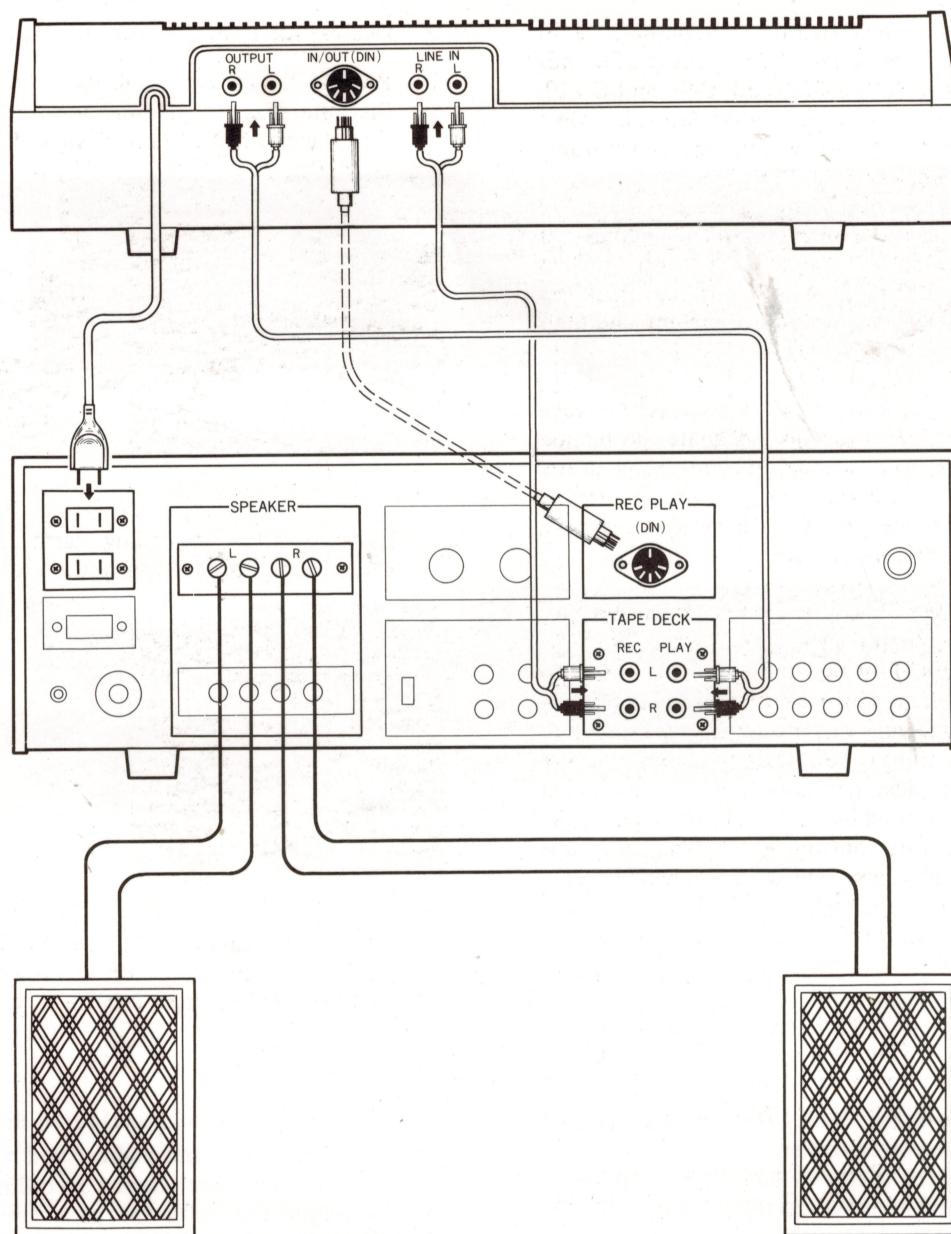
power from the deck. This is accomplished only by the power switch.

14. **Tape selector switch (CrO₂ – REGULAR):** Provides exact recording requirements to obtain maximum frequency response from conventional or high performance tapes such as chromium dioxide tapes. Has no effect during playback.
15. **REC Mode:** Selects between high and low level inputs. Use LINE IN position for optimum noise reduction. In LINE IN position microphone pre-amplifier is bypassed.
16. **Dolby (IN-OUT) switch:** When placed to IN position, activates the Dolby circuits for record or playback. Place to OUT position for playback of non Dolby process tapes. When switch is placed to IN position the lamp labeled DOLBY (upper right corner of deck) will illuminate to indicate operation of the Dolby circuitry.
17. **Peak level indicator:** Provides an instantaneous indication of a near overload condition. Should be used in conjunction with the VU meters to maintain the highest possible recording signal just short of the point where distortion begins to occur. Frequent flashing of this indicator while recording indicates that the incom-

ing signal level should be reduced slightly.

18. **VU Meters left and right:** Used to monitor the, incoming signal level during recording, should be used in conjunction with the peak level indicator and L RECORD R controls to maintain proper signal level while recording. During playback the output signal is displayed and VU meters may be used to provide exact stereo channel balance between left and right channels.
19. **GND Terminal:**
20. **Output:** Output jacks should be connected to tape play or auxiliary jacks of receiver or amplifier.
21. **DIN In/Out:** Jack for single DIN cord connection. See connection page 3.
22. **Line in jacks:** Used when recording from an amplifier, receiver or another tape deck.
23. **L MIC R, left and right channel microphone inputs:** Use only a good quality dynamic or condenser microphone of 600 ohm impedance.
24. **Phone jack:** Provides source monitor during recording, allows private listening during playback. Output is controlled by L OUTPUT R level controls. Will accept any standard stereo headphones of 8 ohm impedance.

Connecting the TEAC A-350 to your audio system



Connections

Playback: Connect OUTPUT jacks to the auxiliary or tape monitoring jacks on your receiver or amplifier.

Record: Your 350 is equipped with dual input jacks, DIN and Mike inputs are common and should be used for low level signals. The LINE IN jacks are used when recording from a tuner, a record player or another tape deck. Since the input selector switch allows you to select between the various inputs, cables may be attached and left in position. Optimum noise reduction is achieved through the LINE IN jacks as in this switch position the microphone preamplifier is bypassed therefore the small inherent noise of these stages is not added to the final recording.

Microphones: Since this is a professional grade recorder, microphones used should be of equivalent quality to prevent any sound degradation. Any good quality microphone with an output impedance of 600 ohms may be used. We

highly recommend the use of the TEAC MC-201 Electret Condenser microphone for the ultimate in live recording quality.

In some instances the use of the DIN cord may result in slightly increased hum and or reduced high frequency response. If this is the case with your system we recommend that you use the individual cables supplied with the model 350, connected to LINE IN and to OUTPUT jacks as shown in diagram.

Caution

Before operating your cassette be certain it is set for the AC line voltage and frequency (50 or 60 Hz) for your locating.

The voltage and frequency have been preset at the factory and are stamped on the shipping carton. If frequency conversion is required see "Frequency Conversion" page 6.

A cassette is of course a small cartridge containing a reel to reel tape. Blank cassettes are available in a variety of brands and in several lengths such as C-30, C-60, C-90 and C-120, the numbers corresponding to the total recording time available in each cassette. (C-30=30 minutes of recording time, 15 minutes per side).

The TEAC 350 has been designed for the tape thickness and proper tape tension for either C-30, C-60 or C-90 cassettes. Since the C-120 tapes are of a different thickness and tension requirements vary we do not recommend their use on the 350 deck.

Cassette Storage: Most cassettes come with a plastic storage container. This container provides adequate protection from dust etc. Always store cassettes at room temperature, away from any heat source and away from any strong magnetic fields such as are present near speaker magnets, transformers, large electric motors etc.

Use of New Cassettes: When using a new cassette or one that has been stored for an extended period of time there is always the possibility that the tape may adhere to itself within the container. This will often produce fluctuations and will introduce wow and flutter into your recordings. Therefore when using a new cassette or one that has been unused for an extended period of time we recommend that you place it in the machine and cycle the tape by depressing the fast forward button ►►. Wind the tape completely to the end, then depress the rewind button ◀◀ until the tape is completely rewound onto the left reel. This will assure a uniform rewind on the tape without tight spots or adhesion.

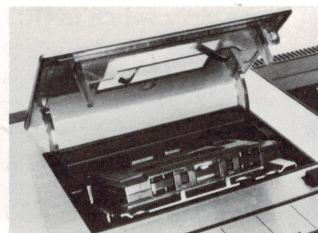
A more uniform wind will result from use of the **PLAY** position as opposed to fast forward or rewind positions. For optimum tape life and performance tapes should be stored from the **PLAY** position when possible.

The TEAC 350 cassette deck is designed to use either conventional (ferrous oxide) or high performance (Chromium Dioxide or Cobalt oxide) tapes. The tape selector switch must be in the proper position for the type tape being recorded. The high performance tapes require a recording bias approximately 50% greater than do conventional tapes.

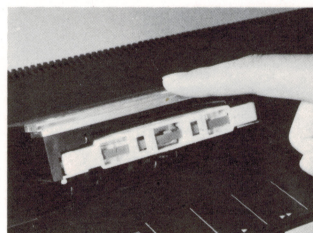
Note: To fully realize the benefits of the Dolby Noise Reduction Process using the 350 the following brands of cassette tape are recommended.

TDK	SD C-60, SD C-90
SONY	C-60HF, C-90HF
SCOTCH	271 (C-60), 272 (C-90)
BASF	Chromdioxid C-60
MEMOREX	Chromium Dioxide 60

1. Depress the EJECT button to full down position.
2. Remove the cassette from its carton, and position it so that the front (tape window area) is facing you and that the full reel of tape as viewed from the top is on your left.



3. Insert cassette into loading platform as far as possible.
4. Push compartment lid down until it locks closed.



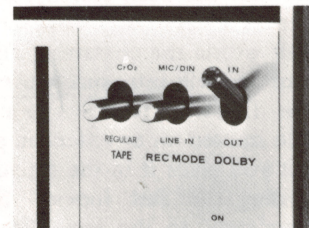
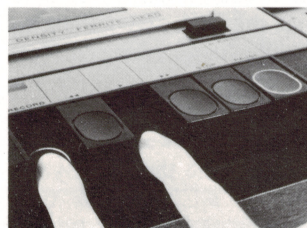
5. To remove cassette, depress EJECT button to full down position. Compartment lid will open and loading platform will elevate. Lift cassette from loading platform.

Playback procedures

1. Prepare power amplifier for playback or insert head-phone into jack.
2. Turn on the model 350.
3. Insert cassette into compartment, close compartment.
4. Set index counter to zero.
5. If the tape to be played was Dolby processed place the DOLBY switch to the IN position. If it is a non-Dolby tape place switch to OUT position.
6. Depress ► play button to begin playback.
7. Adjust volume and balance with the L OUTPUT R controls.
8. To momentarily interrupt playback, depress the PAUSE button, to resume playback, depress again and release.
9. When playback is completed the Auto-stop mechanism will stop the tape, return all controls to neutral and retract the pinch roller.
10. To remove cassette depress the EJECT button, the compartment will open, depress again and the cassette will be elevated for easy removal.

Recording procedures

1. Prepare auxiliary equipment such as tuner, amplifier, turntable etc. for recording.
2. Turn on the model 350.
3. Insert cassette into recorder, close compartment.
4. Set index counter to zero.
5. Set TAPE selector switch to proper position for tape to be recorded. (REGULAR position for ferrous oxide tapes, CrO₂ for low noise/high output tapes)
6. Place DOLBY switch to IN if tape is to be recorded using DOLBY process.
7. Depress the PAUSE button.
8. Simultaneously depress the RECORD and ► (play) buttons. Record indicator light will illuminate.
9. Advance the L RECORD R controls until the recording signal on the VU meters centers around the zero VU point.
10. Depress and release the PAUSE button, you are now recording. Observe the VU meters and the PEAK LEVEL indicator and make corrections as required to maintain optimum recording level.
11. When recording is completed, depress the STOP button.



Note: Since your choice of tape types is unlimited with the model 350 optimum recording levels may vary slightly with the type tape used. Experimentation and increasing familiarity will aid you in determining the optimum recording signal level.

PAUSE button may be used at any time while recording, the amplifiers remain in the "ready" state as long as the pause button is depressed.

The normal position of the INPUT selector switch will be determined by the way the model 350 is connected to your system. For optimum noise reduction, the normal signal input would be connected to the LINE IN jacks, the normal position of the INPUT SELECTOR switch would then be LINE IN.

When doing live recording from microphones, or should you connect the model 350 to your amplifier with the DIN cord, the normal position of the INPUT selector switch would of course then be MIC/DIN. In this switch position, signals are routed through an additional microphone pre-amplifier stage rather than going directly to the DOLBY circuitry. In this case the efficiency of the noise reduction process is slightly reduced.

The cassette is provided with a recording safety feature which protects your pre-recorded cassette, or one you may have just recorded, against accidental erasure.

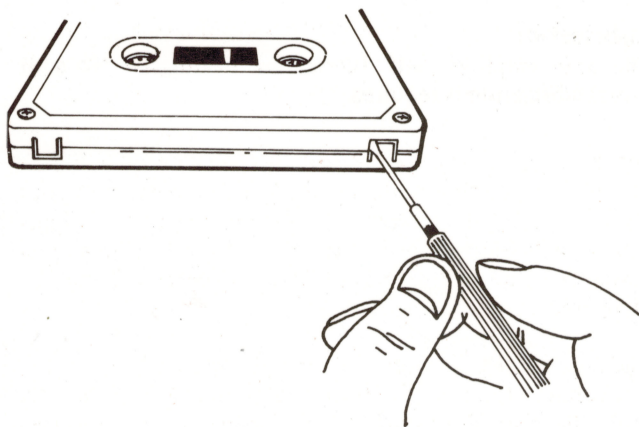
The safety feature employed consists of two removable tabs, one for each side of the tape, appearing in the rear of the cassette housing. These tabs will have been removed on any prerecorded tapes you may have purchased and evidence of their removal will be the two, small square indentations appearing on either side of the rear of the plastic housing.

Once you have made your own recording on a blank cassette, and you wish to protect against accidental erasure, it will be necessary for you to remove one or both of these tabs to protect either or both sides of your recorded cassette against accidental erasure, as follows:

If both sides have been recorded, merely insert a fine screwdriver in the opening around each tab and gently pry the tab off. Be sure the tab falls free from the cassette.

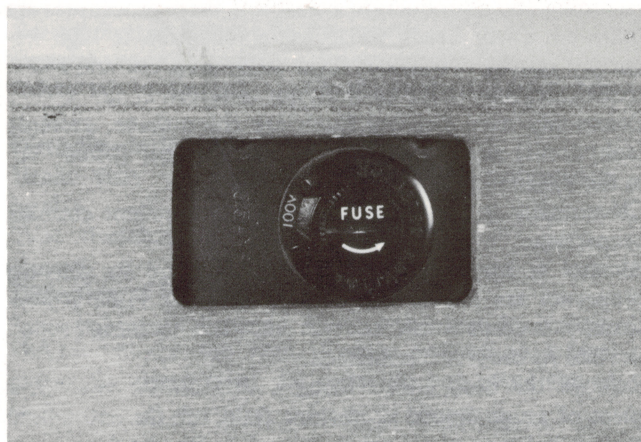
If one side only has been recorded, place the cassette on a table as removed from the recorder, with the side just recorded facing up and the exposed tape area facing you. The correct tab to be removed will be in the lefthand corner of the cassette.

Note : If at some future date you wish to make a recording over a previously protected tape, simply place a piece of adhesive tape over the tab opening. This will permit you to make a new recording. Removal of the adhesive tape following the recording will again insure against accidental erasure.



Voltage Conversion

The 350 will operate on input voltages of 100/117/200/220/240 volts AC, to change the input voltage, unscrew the fuse in the center of the voltage selector plug (located on bottom of decks) pull out the plug and reinsert it so that the desired voltage shows in the cutout, reinstall the fuse.



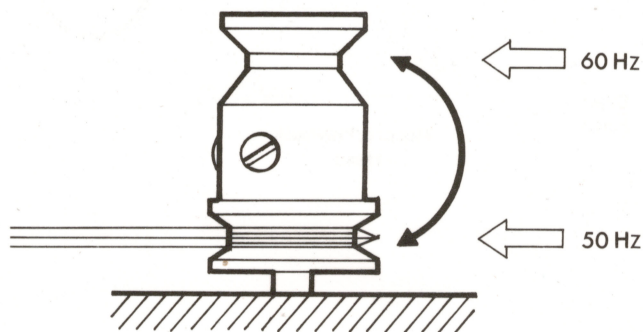
Frequency Conversion

Two operations are required to change the operating frequency.

- A. Motor drive pulley must be inverted.
- B. Frequency selector switch must be set to proper line.

The 350 is equipped with a dual step pulley — large diameter end is for 50Hz and smaller diameter end is for 60Hz. To reverse pulley position perform the steps listed below.

1. Invert the player.
2. Remove case by removing 6 screws in bottom of case.
3. Remove belt from motor pulley.
4. Loosen the 2 set screws holding pulley to motor shaft, lift pulley from shaft.
5. Invert pulley, replace on motor shaft in approximately the same position as before, tighten set screws.
6. Replace belt.
7. Place frequency switch adjacent to motor at 50 or 60Hz position as required by your line frequency.
8. Rotate motor by hand to be certain belt is properly positioned.



Maintenance

Cleaning of the heads

The single most important point in tape deck maintenance is frequent and proper cleaning of the heads. The heads should always be cleaned before making important recordings and at least once for every 8 hours of use (record or playback). The small amount of time and effort required will be more than compensated for by the higher quality of recording and reproduction available if these procedures are followed. Dirty heads will cause a reduction in high frequency response, irregular head wear, drop out and in extreme cases may cause the deck not to record at all.

Commonly used cleaning fluids are chlorothane, absolute (anhydrous) alcohol and TEAC Head Cleaner (Fluid "A" in the TZ-261 kit).

Chlorothane is non-flammable and has excellent cleaning properties.

Alcohol is harmless but is combustible and its cleaning properties are lower. TEAC Head Cleaning Fluid is non-toxic, non-combustible and has excellent cleaning properties and its use is recommended.

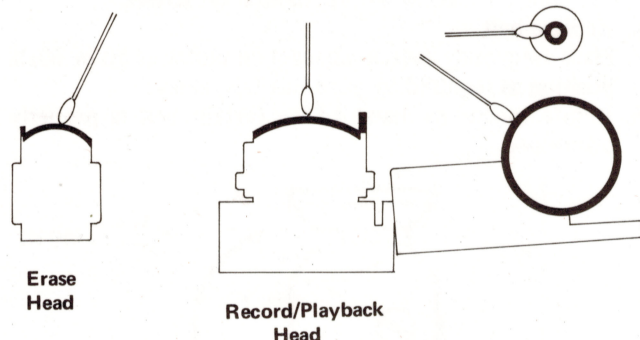
Remove the head cover. Using a stiff cotton swab or a piece of gauge dipped in cleaning fluid, rub the entire head surface being cautious not to scratch it. Repeat the process on each head until all discoloration and tape oxides are removed. Clean all metal parts over which the tape passes, such as capstan shaft, tape guides, tape lifters etc.

The cotton swabs should have a rigid shaft, a satisfactory job cannot be accomplished with the slender flexible types often seen. Those supplied in the TEAC TZ-261 kit, also available separately as TZ-254 are recommended.

Cleaning of the pinch roller

After prolonged use of the pinch roller will accumulate a film of oxide. Use only Fluid "B" from the TEAC TZ-261 kit as it is especially formulated for cleaning rubber surfaces. Do not use chlorothane as it will cause deterioration of the rubber roller.

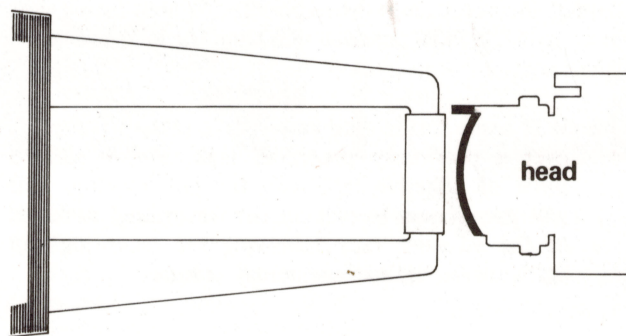
To remove pinch roller for cleaning, grasp with fingers and pull forward.



Demagnetizing

During long periods of use, the heads will become slightly magnetized. As a result, the high frequency will decrease, noise will develop, or in extreme cases the high regions will drop out or introduce noise into your valued pre-recorded tapes. To keep your recorder operating at optimum efficiency the heads should be demagnetized at least once for every 50 hours of use, with the TEAC Model E-1 Head Demagnetizer, using the procedures outlined below.

1. Turn off power to the tape deck.
2. Attach the plastic protectors on the pole tips of the demagnetizer.
3. Plug the demagnetizer cord into an A.C. outlet.
4. Depress the demagnetizer power button, bring the tip close to the head and slowly move it up and down 4 or 5 times.
5. Slowly draw it away from the head.
6. After finishing the above procedure on each head, turn off power to the demagnetizer ONLY after it has been drawn at least 12 inches away from the heads.
7. The same demagnetizing procedure is followed on each head, capstan shaft, and the posts.



Lubrication

The 350 employs self lubricating bearings — No additional lubrication is required.

Specifications

Heads	Two, erase and record-playback, 4 track 2 channel stereo
Type of Tape	Cassette tape C-60 and C-90 (Philips type)
Tape Speed	17 $\frac{1}{8}$ ips
Motor	Hysteresis synchronous outer-rotor motor
Wow and Flutter	0.13%
Frequency Response	30 – 13,000 Hz 30 – 16,000 Hz (chromium dioxide tape)
Signal to Noise Ratio	50 dB 58 dB (with Dolby process)
Fast Winding Time	Approximately 80 seconds for C-60
Inputs	Microphone: 0.25mV/-72dB (600 – 10,000 ohms)
Outputs	Line : 0.1V, 50,000 ohms or more 10,000 ohms or more Headphone : 8 ohms
Power Require- ments	100/117/200/220/240 V AC, 50/60Hz, 15W
Dimensions and Weight	4 $\frac{3}{8}$ " (H) x 16 $\frac{1}{16}$ " (W) x 9 $\frac{7}{8}$ " (D), 11 $\frac{3}{4}$ lbs (net) 110 (H) x 430(W) x 250(D)mm, 5.3 kg (net)

* Features and specifications subject to change without notice.

Standard Accessories

Input-output connection cord	2
Fuse	1
Cleaning stick	1

Trouble shooting chart

Tape Deck Does Not Run in Play Mode

Disconnected power cord. Check to see that it's plugged in.

Blown fuse . . . Replace with good fuse.

Pause button depressed . . . Release PAUSE button.

Tape wound irregularly. Wind the tape in fast forward mode.

Record Button Cannot Be Depressed

Cassette tape not loaded . . . Insert cassette tape.

Safety tab broken off . . . Check cassette for safety tab.

Distortion in Record and Playback

Heads dirty or magnetized. Clean and demagnetize heads.

Tape stretched . . . Replace tape.

Distortion of Playback Only

Recorded tape is distorted. Play another tape for testing.
Output volume too high. Reduce volume to a level where the pointers of the meter do not swing out of scale.

Distortion During Recording Only

Record level too high . . . Reduce record level to the point where the level meters do not indicate off scale.

Excessive Wow (Changes in Pitch)

Capstan or pinch roller dirty . . . Clean capstan and pinch roller.

Irregularly wound tape . . . Rewind tape in fast forward mode.

Excessive Noise

Magnetized head . . . Demagnetize the head.

Noisy tape . . . Erase complete tape. If noise persists, discard the tape.

Loud Hum Head in Playback

Pin plug not fully inserted or has broken ground ...
Insert pin plug . . . Repair ground.

Tape deck too close to high magnetic field . . . Move recorder to new location.

TEAC CORPORATION

TEAC CORPORATION OF AMERICA

TEAC EUROPE N.V.

TEAC HONGKONG LIMITED

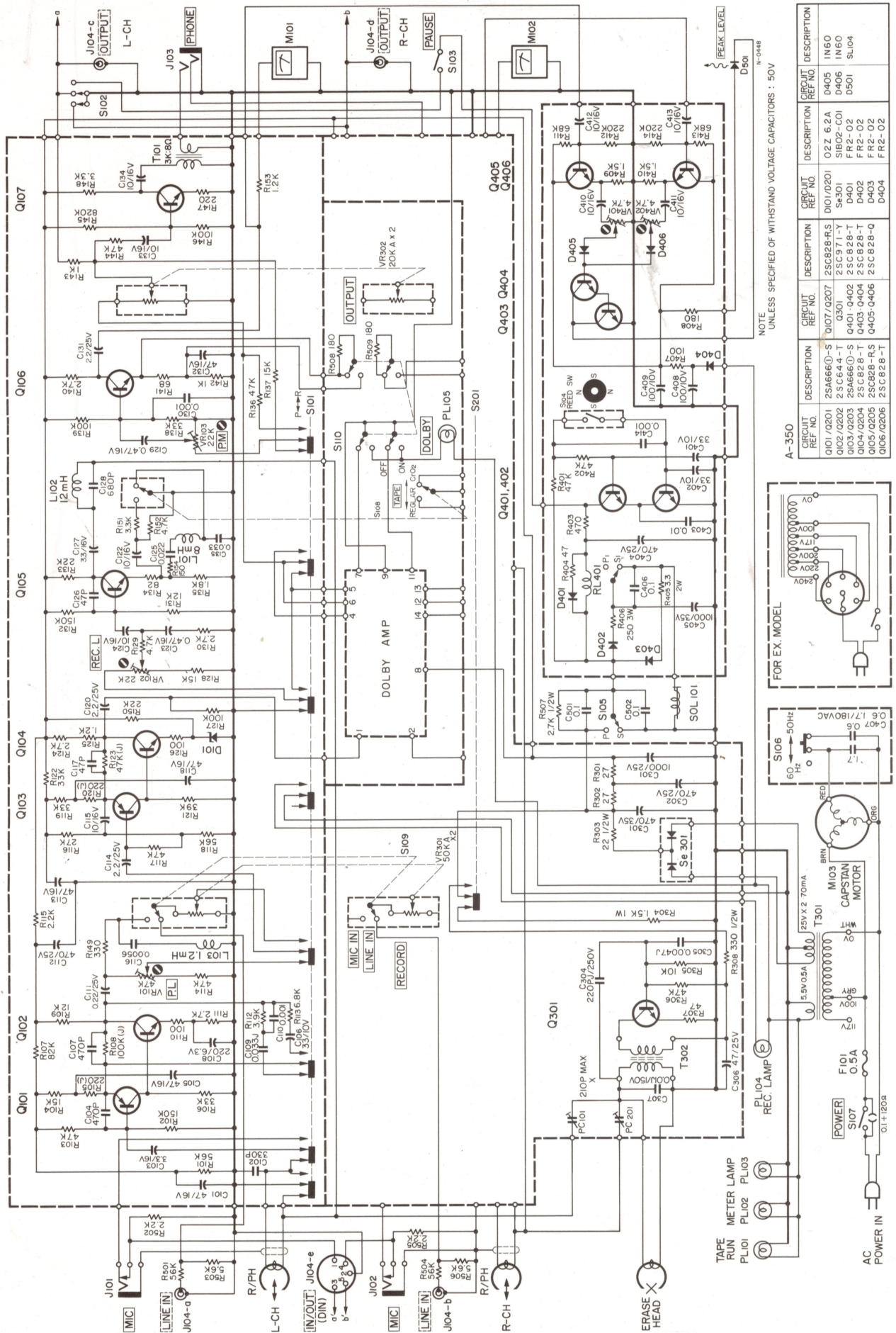
SALES OFFICE: SHINJUKU BLDG., 1-8-1, NISHI-SHINJUKU, TOKYO PHONE: (03) 343-5151

7733 TELEGRAPH ROAD, MONTEBELLO, CALIFORNIA 90640 PHONE: (213) 726-0303

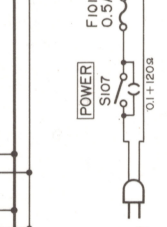
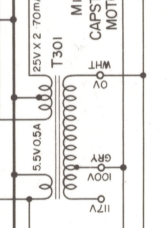
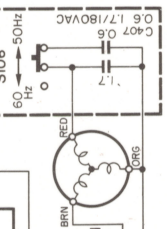
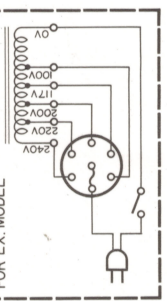
KABELWEG 45-47, AMSTERDAM-W. 2 NETHERLANDS PHONE: 020-821656

ROOM NO.1105 MELBOURNE PLAZA 33 QUEEN'S ROAD C, HONG KONG PHONE: 252027-9 252020

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CIRCUIT REF. NO.	DESCRIPTION	CIRCUIT REF. NO.	DESCRIPTION	CIRCUIT REF. NO.	DESCRIPTION
Q101/0201	2SA660-S	Q107/0207	2SC828-RS	D101/0201	02T 6.2A
Q102/0202	2SC644-T	Q301	2SC644-T	S102-COI	D405 IN60
Q103/0203	2SA660-S	Q401-0402	2SC828-T	D401	FR2-02
Q104/0204	2SC828-T	Q403-0404	2SC828-T	D402	FR2-02
Q105/0205	2SC828-RS	Q405-0406	2SC828-Q	D403	FR2-02
Q106/0206	2SC828-T			D404	FR2-02



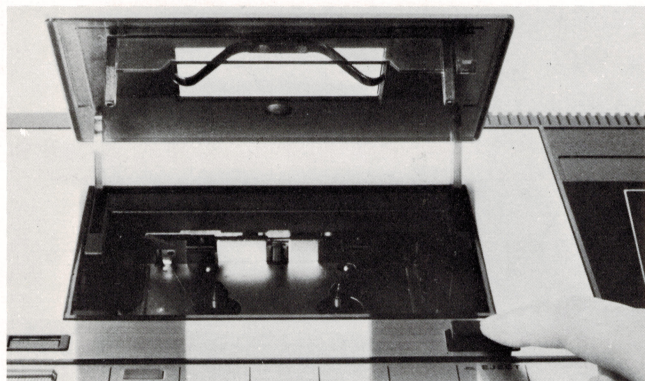
Maintenance Guide

● Head Cleaning

Clean heads are probably the most important single factor in the result you obtain from your unit.

● Cleaning Procedure

Depress the EJECT button to full down position for cleaning and demagnetization.



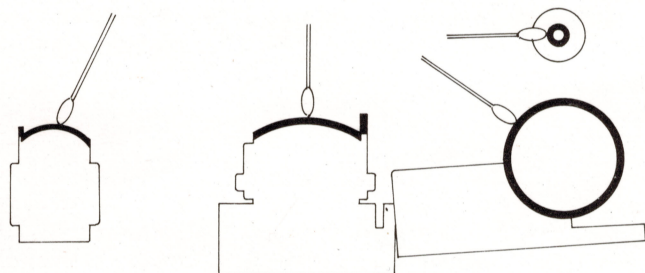
● Preparation

TEAC TZ-251 Cleaning Kit.



● Cleaning

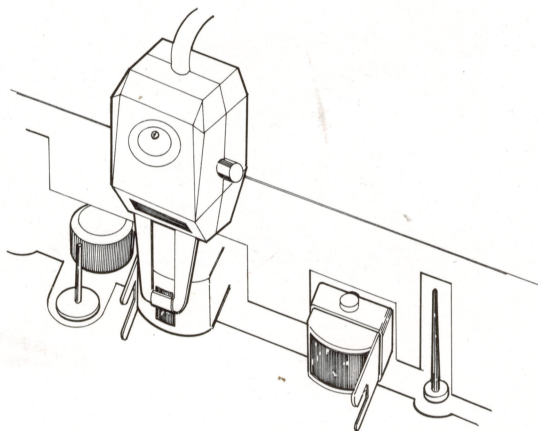
Clean all head surfaces thoroughly with a stiff cotton swab moistened with TEAC TZ-251A Head Cleaner. Apply moderate pressure but be careful not to scratch head surfaces. Clean entire tape path including tape guide-tape lifters, capstan shaft & pinch roller (use TEAC TZ-251B Rubber Cleaner for pinch roller).



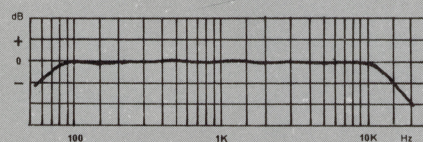
● Demagnetizing



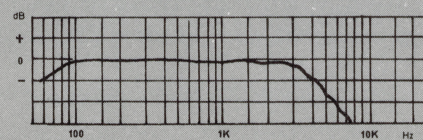
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Frequency response curve
— clean head



Frequency response curve
— dirty head

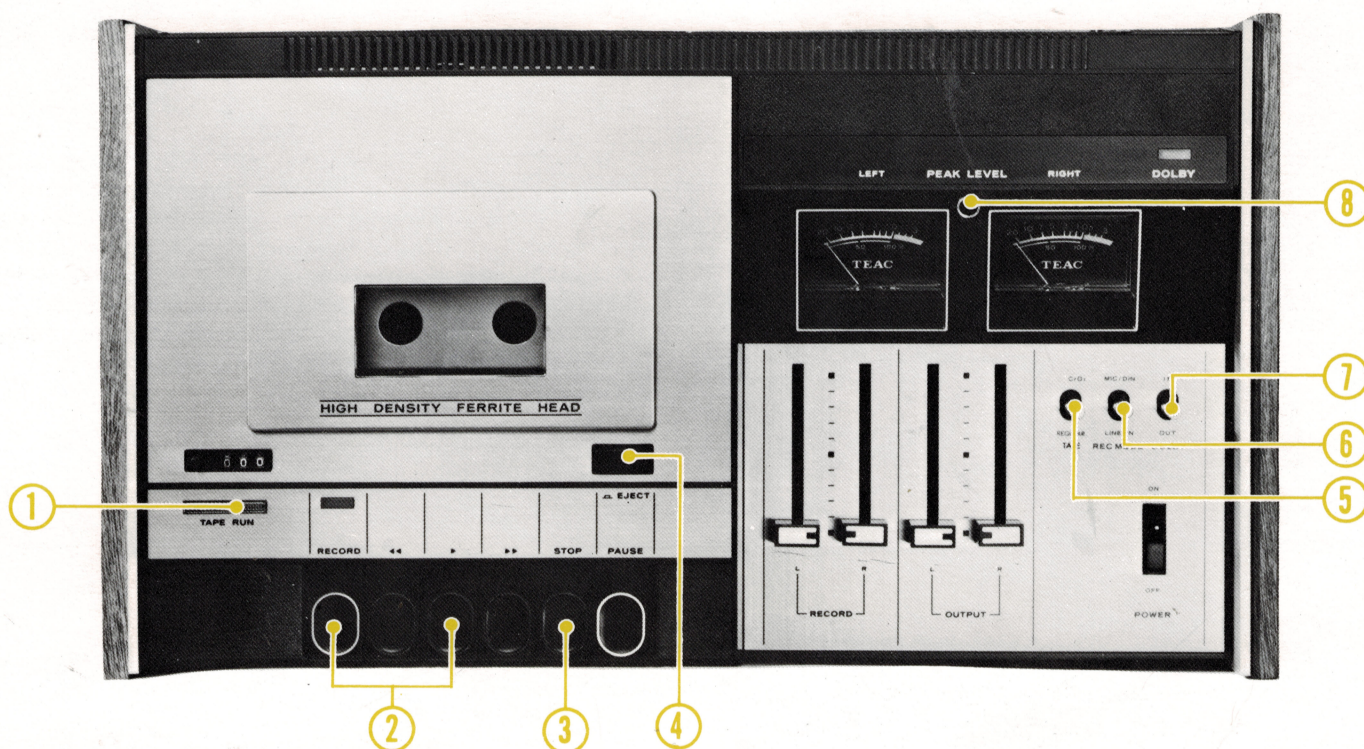


TEAC®

A-350/350

● Consult your operation manual before connecting or operating your new recorder.

Although the unit is still under the warranty period you may be charged for repairs made necessary by misuse, or for damage incurred as a result of improper operation.



① Tape run indicator

Indicates speed and direction of tape motion.

② Record button

Activates the recording circuits, must be depressed simultaneously with the ► (play) in order to start tape motion when recording. Also causes recording.

③ Stop button

When changing from function to function such as fast forward to rewind etc., always depress the stop button before changing functions to prevent damage to the drive mechanism.

④ Eject button

Depress to open cassette compartment and to elevate cassette.

⑤ Tape selector switch (CrO₂-Regular)

Provides exact recording requirements to obtain maximum frequency response from conventional or high performance tapes such as chromium dioxide tapes. Has no effect during playback.

⑥ REC Mode

Selects between high and low level inputs. Use LINE IN position for optimum noise reduction. In LINE IN position microphone pre-amplifier is bypassed.

⑦ Dolby (IN-OUT) switch

When placed to IN position, activates the Dolby circuits for record or playback. Place to OUT position for playback of non Dolby process tapes. When switch is placed to IN position the blue lamp labeled DOLBY (upper right corner of deck) will illuminate to indicate operation of the Dolby circuitry.

⑧ Peak level indicator

Provides an instantaneous indication of a near overload condition. Should be used in conjunction with the VU meters to maintain the highest possible recording signal just short of the point where distortion begins to occur. Frequent flashing of this indicator while recording indicates that the incoming signal level should be reduced slightly.

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